Bore Hole Inspection System for the MARTE project

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Borehole logging is a standard technique used in the study of the Earth's subsurface. Several papers dealing with planetary drilling have referenced logging instrumentation as a necessary complement to analyzing returned core samples on the surface.

For this reason, the Centro de Astrobiología has designed a system named BHIS (BoreHole Inspection System) in the framework of the Mars Analog Research and Technology Experiment (MARTE). The design and integration phase has concluded and we are ready for our first field test near the Rio Tinto.

The BHIS is optimized to study a 48mm borehole as a complement to core-sample analysis. BHIS is capable of performing in-situ the following analysis:

1. The logging instrument will be able to position down the hole, from 0 to 25 m, with a precision of 0.1mm
2. The Macroimage Unit should record a panoramic image of the hole wall, with a resolution better than 1 mm/pixel.
3. A miniature Raman spectrometer probe will also be included in the quantification of mineral paragenesis of rocks; ion assessment in aquifers; detection and determination of organic matter and biomolecules.
4. A magnetic susceptibility sonde will be used for lithological composition and the detection of metallic ores.